

Stewardship Notes

Indiana Division of Forestry



Direct Seeding

It is quite possible to plant tree seeds to reforest a site or to increase the number of a particular species of tree per acre. Direct seeding is less expensive and faster than planting bare root tree seedlings, although planting seedlings is more consistently successful.

Since heavy seeds (oak, walnut, hickory, pecan, persimmon, etc.) are not spread as easily as those spread by wind (maple, cottonwood, ash, tuliptree, etc.) this sheet will discuss heavy seeded species.

Choose the Site

Be sure the species of tree to be seeded will survive and thrive on the site. Extremes of site conditions, such as a wet bottomland or a dry, rocky hilltop, require different tree species. Your district forester can help you choose the best species for your site.

Amount of Seed Needed

It is desirable to establish at least 500 seedlings per acre; more is preferable. Plan to plant two or three times this amount of seed over two to three consecutive years or until this goal is reached. To achieve this density, plant rows 10 feet apart with seeds spaced every 8 to 10 feet in the rows. Seeds do not have to be planted in rows, but it does help to relocate the seedlings to measure germination success and to control competition.

Seed Collection

All heavy tree seeds mature in the fall. Seed quality, source and availability are the three most important considerations in seed collection.

- Seed quality, or the ability to produce a seedling, varies greatly from year to year and from tree to tree. The only practical way to estimate quality is to "cut test" a random sample of seed for a given tree. The seed should be cut in half lengthwise. A good seed will be bright in color and not severely damaged by insect larvae. Healthy seed color ranges from white to orange. On average, it takes two good seeds to produce one viable seedling.
- The best source of seed is a local source because it is likely to be adapted to local conditions. If a local source is not available, it is best to obtain seed from within a 200-mile radius of the planting area.
- Tree seed crops vary widely from year to year. Most species have a 2 to 4 year cycle from abundance to scarcity.

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Seed Dormancy

Most tree seeds are dormant when they fall from the tree. Dormant seeds will not germinate until they have been exposed to cool, moist (but not freezing) conditions for about three months. In nature, this ensures the seed does not germinate until the following spring. Members of the white oak group (white oak, chinkapin oak, swamp chestnut oak, etc.) have seeds that produce a root in the fall but do not develop a shoot until spring.

Seed Storage

The major consideration in seed storage is to keep the seeds moist (not wet) and cool (about 35 degrees F) until they can be sown. If the seed is allowed to dry out, it may lose viability, or may set dormancy so there will be no germination until the second spring after sowing.

Planting Seed

The best time to plant seed is in the fall as soon as the seed can be collected. It should be sown with about 1/2" of soil cover and protected with a light cover of mulch if the soil is otherwise bare over the winter. Planting seed too deep will delay emergence of the seedling.

Seed Protection

The most likely cause of failure of direct seeding is predation of seed by a wide variety of wild creatures ranging from squirrels to deer. There are few cost-effective means of preventing this damage other than reducing the population of seed predators. The other cause of seed loss is extreme cold weather (0 degrees F and below) without snow. One approach that may reduce loss is to sow the tree seed as early as possible in the fall and then plant wheat to produce a cover crop. The wheat is selectively killed in late spring with a herbicide such as Fusilade*. Another approach is to store the seed over winter in a refrigerator and plant in the spring. This does not eliminate the problem of squirrels and other creatures, however, as they have exhausted their other sources of food by spring.

Site Preparation

Annual and perennial weeds will severely compete with direct seeded plantings on most sites. Tree seedlings growing from seed grow quickly for about 6 weeks after emergence while they have food reserves from the seed. After these reserves have been used, top growth will nearly cease unless weed competition is controlled. The growth that does occur will be mainly in the root system. It is probable that the seedlings will grow very

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slowly for several years until their root systems have become large enough to compete with the existing vegetation.

For more information on direct seeding, contact your district forester or the Division of Forestry office at:

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*Mention of a specific product or brand name is not meant to be an endorsement of that product by the Division of Forestry or the state of Indiana, but is for identification purposes only.